NMCP COVID-19 Literature Report #80: Friday, 05 November 2021

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Purpose: These reports, published every other week on Fridays, are curated collections of current research, evidence reviews, special reports, grey literature, and news regarding the COVID-19 pandemic that may be of interest to medical providers, leadership, and decision makers.

All reports are available online at https://nmcp.libguides.com/covidreport. Access is private; you will need to use the direct link or bookmark the URL.

Disclaimer: I am not a medical professional. This document is current as of the date noted above. While I make every effort to find and summarize available data, I cannot cover everything in the literature on COVID-19. Please feel free to reach out with questions, suggestions for future topics, or any other feedback.

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The Big Picture

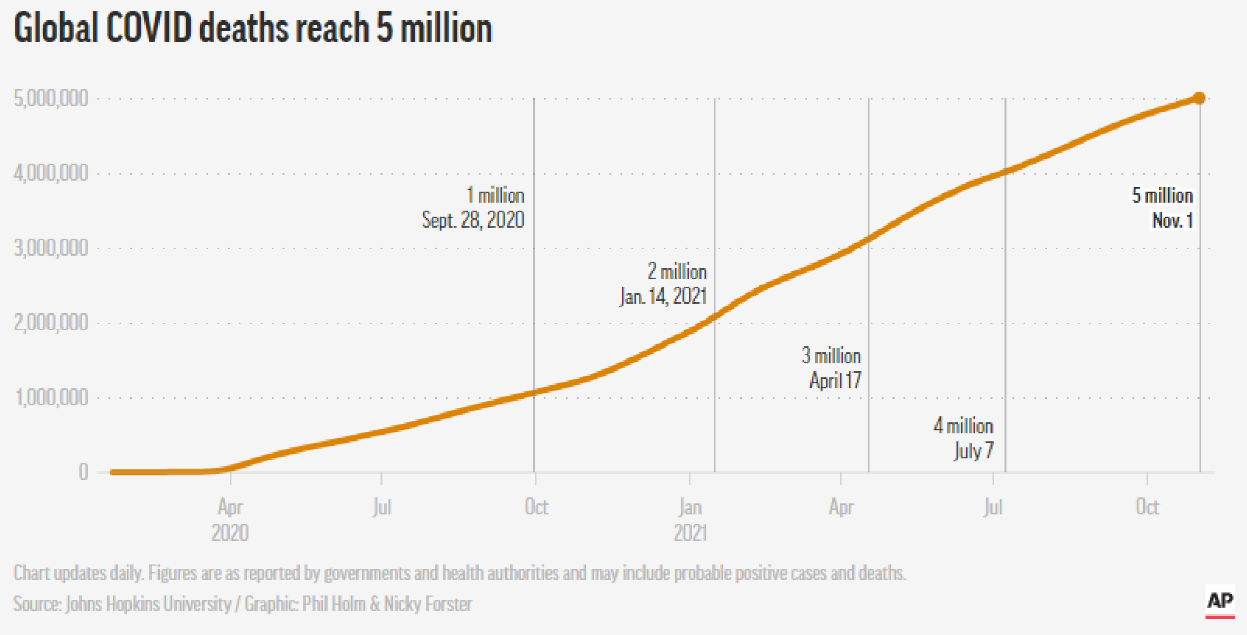
Global COVID deaths reach 5 million

Chart updates daily. Figures are as reported by governments and health authorities and may include probable positive cases and deaths.
Source: Johns Hopkins University / Graphic: Phil Holm & Nicky Forster

From: "COVID-19's global death toll tops 5 million in under 2 years" (AP).

News in Brief

Over 750,000 have died from COVID-19 in the US alone. "If the Americans who've died of covid made up a state, it would rank 47th in the country, more populous than Alaska, Vermont or Wyoming. The District of Columbia — though not a state, it surpasses Vermont and Wyoming in population — also would be eclipsed." (WP).

"Covid study finds some 28 million extra years of life lost in 2020, with U.S. male life expectancy badly hit" (WP; see also: BMJ article).

"America has lost the plot on COVID — we're avoiding the hardest questions about living with the coronavirus long term" (Atlantic).

"[W]hile progress has been made through increased uptake of COVID-19 vaccines and therapeutics, analysis of the present situation and forecasting models indicate that the pandemic is far from finished" (WHO).

"Global Preparedness Monitoring Board warns world needs 'coherent and concerted' reforms to end COVID-19, prevent future pandemics" (HPN; see also: GPMB report).

Webinars and Events

WHAT: Preparing for the Next Pandemic

WHEN: Monday, 08 November 2021 0900–1045 EST

DETAILS: "The term "post-pandemic world" has become ubiquitous ever since COVID vaccines were made widely available to the developed world. Yet, the bio-policy implications of a world coming out of The COVID-19 pandemic are rarely evaluated critically and holistically. COVID-19 pandemic points to the reality that a multifaceted approach is necessary to prevent future pandemics or, should the need arise again, how to stop them in their tracks.

This panel brings together experts from different corners of the biosafety and biosecurity space to discuss lessons learned from the world's response to COVID-19 and analyze policy pathways moving forward.

Key Takeaways:

- Biorisk management related to COVID-19 pre and post-pandemic
- National readiness and response patterns for different governments around the world
- Contributions/understandings of zoonotic disease research relative to pandemic response
- Vaccine rapid-research and vaccine geopolitics"

REGISTER: https://crdfglobal.zoom.us/webinar/register/WN_AO6QvrzdT0GHERCcdqDVRw

WHAT: Inside the Pandemic: A candid conversation with Dr. Michael Osterholm and Andy Slavitt

WHEN: Thursday, 18 November 2021 1230–1430 EST

DETAILS: "Watch live as U of M COVID-19 expert Dr. Michael Osterholm and Former Senior Advisor to the Biden Administration’s COVID Response Andy Slavitt talk one on one about COVID-19.

Deeply relevant to our world today, these leading experts will talk candidly about the challenges of the pandemic, what went right and what went wrong, ripple effects of the pandemic, and what’s next."

REGISTER: https://umf.formstack.com/forms/InsideThePandemic

Special Reports and Other Resources

JHCHS: Navigating the World that COVID-19 Made: A Strategy for Revamping the Pandemic Research and Development Preparedness and Response Ecosystem (29 October 2021)

> "The COVID-19 pandemic has revealed that a true, end-to-end research and development (R&D) and response ecosystem—meaning, one that develops, produces, and delivers needed vaccines to global populations in a rapid and equitable fashion—remains an elusive goal. Most low- and middle-income countries (LMICs) have been unable to acquire and administer a sufficient supply of COVID-19 vaccines, and the dearth of vaccines and limited capacity to deliver them are prolonging the pandemic and contributing to destabilizing economies and societies around the world. Multilateral initiatives, bilateral aid, and vaccine donations, though useful, have been slow to arrive and insufficient to provide adequate vaccine coverage for LMIC populations. The consequences of this deeply inequitable global response extend beyond the COVID-19 pandemic. Global initiatives to prepare for and respond to future pandemic threats cannot succeed if LMIC governments believe they will be the last to benefit from vaccines produced as a result of improvements in global disease surveillance, increased sample sharing, or expedited vaccine R&D.
>
> In short, the actions being taken to respond to the COVID-19 crisis are writing the opening chapters to the story of how we will prepare for and respond to the next pandemic threat. To prevent the devastation that has accompanied the COVID-19 pandemic from happening again, we must not only identify the successes and failures that have emerged from the global response, we must also anticipate how our response has changed government, industry, and civil society priorities for the pandemic R&D and response ecosystem in order to confront to future threats."

GAO: COVID-19: Additional Actions Needed to Improve Accountability and Program Effectiveness of Federal Response (27 October 2021)

> "As the nation continues to respond to and recover from the COVID-19 pandemic, recent increases in cases have hampered these efforts and created new challenges.
>
> In our 8th comprehensive report, we found more ways to help the federal government address the pandemic and prepare for future emergencies. Specifically, we made 16 new recommendations, including on ways to ensure proper use of relief funds, oversee worker safety and health, and reduce fraud risks.
>
> To date, federal agencies have fully addressed 33 of our 209 recommendations on the COVID-19 response since June 2020, and partially addressed another 48."

Issues Sci Tech: Twenty Years After the Patriot Act, What Is the Future of Biosecurity? (25 October 2021)

> "The USA Patriot Act was signed into law exactly 20 years ago, on October 26, 2001. While the law was profoundly shaped by the back-to-back events of the September 11 attacks and the 2001 anthrax attacks, it was deeply rooted in in fears about bioterrorism that had been growing since the 1990s. This anniversary provides a moment to reflect upon the Patriot Act's legacy, as well as to imagine and plan for different biosecurity futures."

Journal Articles

Lancet: Estimating the early impact of the US COVID-19 vaccination programme on COVID-19 cases, emergency department visits, hospital admissions, and deaths among adults aged 65 years and older: an ecological analysis of national surveillance data (03 November 2021)

> "Background: In the USA, COVID-19 vaccines became available in mid-December, 2020, with adults aged 65 years and older among the first groups prioritised for vaccination. We estimated the national-level impact of the initial phases of the US COVID-19 vaccination programme on COVID-19 cases, emergency department visits, hospital admissions, and deaths among adults aged 65 years and older.
>
> Methods: We analysed population-based data reported to US federal agencies on COVID-19 cases, emergency department visits, hospital admissions, and deaths among adults aged 50 years and older during the period Nov 1, 2020, to April 10, 2021. We calculated the relative change in incidence among older age groups compared with a younger reference group for pre-vaccination and post-vaccination periods, defined by the week when vaccination coverage in a given age group first exceeded coverage in the reference age group by at least 1%; time lags for immune response and time to outcome were incorporated. We assessed whether the ratio of these relative changes differed when comparing the pre-vaccination and post-vaccination periods.
>
> Findings: The ratio of relative changes comparing the change in the COVID-19 case incidence ratio over the post-vaccine versus pre-vaccine periods showed relative decreases of 53% (95% CI 50 to 55) and 62% (59 to 64) among adults aged 65 to 74 years and 75 years and older, respectively, compared with those aged 50 to 64 years. We found similar results for emergency department visits with relative decreases of 61% (52 to 68) for adults aged 65 to 74 years and 77% (71 to 78) for those aged 75 years and older compared with adults aged 50 to 64 years. Hospital admissions declined by 39% (29 to 48) among those aged 60 to 69 years, 60% (54 to 66) among those aged 70 to 79 years, and 68% (62 to 73), among those aged 80 years and older, compared with adults aged 50 to 59 years. COVID-19 deaths also declined (by 41%, 95% CI –14 to 69 among adults aged 65–74 years and by 30%, –47 to 66 among those aged ≥75 years, compared with adults aged 50 to 64 years), but the magnitude of the impact of vaccination roll-out on deaths was unclear.

> Interpretation: The initial roll-out of the US COVID-19 vaccination programme was associated with reductions in COVID-19 cases, emergency department visits, and hospital admissions among older adults."

JAMA Netw Open: Changes in Virtual and In-Person Health Care Utilization in a Large Health System During the COVID-19 Pandemic (27 October 2021)

> "This cross-sectional study evaluates how the growth of virtual care has impacted health care utilization in an integrated delivery network….
>
> Our results suggest that the transition to incorporate virtual care into our ambulatory care offerings was not associated with increased overall visit volumes. We believe this suggests that, to date, virtual care has been substitutive, rather than additive, within our system and provided a vital avenue for care delivery. We are unable to quantify the true amount of care needed by patients during this time, but it is likely that virtual care offerings lowered barriers in access to care during the period of limited in-person gatherings. This may be particularly true for behavioral health, with a near-complete shift from in-person to virtual visits."

Nat Commun: Potentially long-lasting effects of the pandemic on scientists (26 October 2021)

> "Two surveys of principal investigators conducted between April 2020 and January 2021 reveal that while the COVID-19 pandemic’s initial impacts on scientists’ research time seem alleviated, there has been a decline in the rate of initiating new projects. This dimension of impact disproportionately affects female scientists and those with young children and appears to be homogeneous across fields. These findings may have implications for understanding the long-term effects of the pandemic on scientific research."

SARS-CoV-2 Virus and Variants

News in Brief

"3 takeaways from the emergence of the 'Delta Plus' coronavirus variant" (STAT).

"CDC finds immunity from vaccines is more consistent than from infection, but both last at least six months" (WP; see also: CDC science brief).

"The search for people who never get COVID — An international team of researchers wants to find people who are genetically resistant to SARS-CoV-2, in the hope of developing new drugs and treatments" (Nature).

"What previous Covid-19 waves tell us about the virus now" (NYT).

"Why scientists worldwide are watching UK COVID infections — The country's relaxation of measures such as masking — especially in England — is showing the limits of relying on vaccines alone" (Nature).

"A new study published on the non-peer-reviewed preprint site bioRxiv showed SARS-CoV-2 RNA was widely detected in Iowa deer, and genomic sequencing done on the animals suggests the deer were infected with human virus lineages" (CIDRAP; see also: bioRxiv preprint).

Special Reports and Other Resources

ODNI: Declassified Assessment on COVID-19 Origins (29 October 2021)

> This is the declassified Intelligence Community assessment on COVID-19 origins, released by the Office of the Director of National Intelligence (ODNI).

Journal Articles

Science: Exponential growth, high prevalence of SARS-CoV-2, and vaccine effectiveness associated with the Delta variant (02 November 2021)

> "SARS-CoV-2 infections were rising during early summer 2021 in many countries associated with the Delta variant. We assessed RT-PCR swab-positivity in the REal-time Assessment of Community Transmission-1 (REACT-1) study in England. We observed sustained exponential growth with average doubling time (June-July 2021) of 25 days driven by complete replacement of Alpha variant by Delta, and by high prevalence at younger less-vaccinated ages. Unvaccinated people were three times more likely than double-vaccinated people to test positive. However, after adjusting for age and other variables, vaccine effectiveness for double-vaccinated people was estimated at between ~50% and ~60% during this period in England. Increased social mixing in the presence of Delta had the potential to generate sustained growth in infections, even at high levels of vaccination."

Lancet Infect Dis: Community transmission and viral load kinetics of the SARS-CoV-2 delta (B.1.617.2) variant in vaccinated and unvaccinated individuals in the UK: a prospective, longitudinal, cohort study (29 October 2021)

> Background: The SARS-CoV-2 delta (B.1.617.2) variant is highly transmissible and spreading globally, including in populations with high vaccination rates. We aimed to investigate transmission and viral load kinetics in vaccinated and unvaccinated individuals with mild delta variant infection in the community.
>
> Methods: Between Sept 13, 2020, and Sept 15, 2021, 602 community contacts (identified via the UK contract-tracing system) of 471 UK COVID-19 index cases were recruited to the

Assessment of Transmission and Contagiousness of COVID-19 in Contacts cohort study and contributed 8145 upper respiratory tract samples from daily sampling for up to 20 days. Household and non-household exposed contacts aged 5 years or older were eligible for recruitment if they could provide informed consent and agree to self-swabbing of the upper respiratory tract. We analysed transmission risk by vaccination status for 231 contacts exposed to 162 epidemiologically linked delta variant-infected index cases. We compared viral load trajectories from fully vaccinated individuals with delta infection (n=29) with unvaccinated individuals with delta (n=16), alpha (B.1.1.7; n=39), and pre-alpha (n=49) infections. Primary outcomes for the epidemiological analysis were to assess the secondary attack rate (SAR) in household contacts stratified by contact vaccination status and the index cases' vaccination status. Primary outcomes for the viral load kinetics analysis were to detect differences in the peak viral load, viral growth rate, and viral decline rate between participants according to SARS-CoV-2 variant and vaccination status.

Findings: The SAR in household contacts exposed to the delta variant was 25% (95% CI 18–33) for fully vaccinated individuals compared with 38% (24–53) in unvaccinated individuals. The median time between second vaccine dose and study recruitment in fully vaccinated contacts was longer for infected individuals (median 101 days [IQR 74–120]) than for uninfected individuals (64 days [32–97], p=0·001). SAR among household contacts exposed to fully vaccinated index cases was similar to household contacts exposed to unvaccinated index cases (25% [95% CI 15–35] for vaccinated vs 23% [15–31] for unvaccinated). 12 (39%) of 31 infections in fully vaccinated household contacts arose from fully vaccinated epidemiologically linked index cases, further confirmed by genomic and virological analysis in three index case–contact pairs. Although peak viral load did not differ by vaccination status or variant type, it increased modestly with age (difference of 0·39 [95% credible interval –0·03 to 0·79] in peak log10 viral load per mL between those aged 10 years and 50 years). Fully vaccinated individuals with delta variant infection had a faster (posterior probability >0·84) mean rate of viral load decline (0·95 log10 copies per mL per day) than did unvaccinated individuals with pre-alpha (0·69), alpha (0·82), or delta (0·79) variant infections. Within individuals, faster viral load growth was correlated with higher peak viral load (correlation 0·42 [95% credible interval 0·13 to 0·65]) and slower decline (–0·44 [–0·67 to –0·18]).

Interpretation: Vaccination reduces the risk of delta variant infection and accelerates viral clearance. Nonetheless, fully vaccinated individuals with breakthrough infections have peak viral load similar to unvaccinated cases and can efficiently transmit infection in household settings, including to fully vaccinated contacts. Host–virus interactions early in infection may shape the entire viral trajectory."

MMWR: Laboratory-Confirmed COVID-19 Among Adults Hospitalized with COVID-19–Like Illness with Infection-Induced or mRNA Vaccine-Induced SARS-CoV-2 Immunity — Nine States, January–September 2021 (29 October 2021)

> "What is already known about this topic? Previous infection with SARS-CoV-2 or COVID-19 vaccination can provide immunity and protection against subsequent SARS-CoV-2 infection and illness.
>
> What is added by this report? Among COVID-19–like illness hospitalizations among adults aged ≥18 years whose previous infection or vaccination occurred 90–179 days earlier, the adjusted odds of laboratory-confirmed COVID-19 among unvaccinated adults with previous SARS-CoV-2 infection were 5.49-fold higher than the odds among fully vaccinated recipients of an mRNA COVID-19 vaccine who had no previous documented infection (95% confidence interval = 2.75–10.99).
>
> What are the implications for public health practice? All eligible persons should be vaccinated against COVID-19 as soon as possible, including unvaccinated persons previously infected with SARS-CoV-2."

Clin Infect Dis: Isolation of a Novel Recombinant Canine Coronavirus from a Visitor to Haiti: Further Evidence of Transmission of Coronaviruses of Zoonotic Origin to Humans (28 October 2021)

> "We isolated a novel coronavirus from a medical team member presenting with fever and malaise after travel to Haiti. The virus showed 99.4% similarity with a recombinant canine coronavirus recently identified in a pneumonia patient in Malaysia, suggesting that infection with this virus and/or recombinant variants occurs in multiple locations."

COVID-19 Vaccines

News in Brief

"WHO issues emergency use listing for eighth COVID-19 vaccine" (WHO).

"There's more demand for boosters than first shots of the COVID vaccine" (NPR).

"You're boosted! Now what? No one knows exactly what the rules are for post-booster behavior" (Atlantic).

"Mandates. A well-organized campaign. No politics. How Puerto Rico's vaccine drive turned into a success" (STAT).

Meanwhile, in the US: "'There was no plan': Throwing spaghetti at the wall to overcome Covid-19 vaccine hesitancy" (STAT).

"COVID-19 vaccine-myocarditis paper to be permanently removed" (Retraction Watch).

Podcast: "What do we know about the rare COVID-19 vaccine complications?" (Medpage).

For Children

ICYMI: "FDA authorizes Pfizer-BioNTech COVID-19 vaccine for emergency use in children 5 through 11 years of age" (FDA).

"Moderna says its low-dose COVID shot works for kids 6 to 11" (AP).

Don't expect the EUA for Moderna to follow quickly though; the company says there is a delay as the FDA evaluates its coronavirus vaccine for myocarditis risk (WP).

Journal Articles

MMWR: The Advisory Committee on Immunization Practices' Interim Recommendations for Additional Primary and Booster Doses of COVID-19 Vaccines — United States, 2021 (05 November 2021)

> "What is already known about this topic? In the United States, three COVID-19 vaccines are approved or authorized for primary vaccination against COVID-19.
>
> What is added by this report? The Advisory Committee on Immunization Practices issued recommendations for an additional primary mRNA COVID-19 vaccine dose for immunocompromised persons and a COVID-19 vaccine booster dose in eligible groups.
>
> What are the implications for public health practice? Health care professionals play a critical role in COVID-19 vaccination efforts, including for primary, additional primary, and booster vaccination, particularly to protect patients who are at increased risk for severe illness and death."

MMWR: Effectiveness of 2-Dose Vaccination with mRNA COVID-19 Vaccines Against COVID-19–Associated Hospitalizations Among Immunocompromised Adults — Nine States, January–September 2021 (05 November 2021)

> "What is already known about this topic? Studies suggest that immunocompromised persons who receive COVID-19 vaccination might not develop high neutralizing antibody titers or be as protected against severe COVID-19 outcomes as are immunocompetent persons.

> What is added by this report? Effectiveness of mRNA vaccination against laboratory-confirmed COVID-19–associated hospitalization was lower (77%) among immunocompromised adults than among immunocompetent adults (90%). Vaccine effectiveness varied considerably among immunocompromised patient subgroups.
>
> What are the implications for public health practice? Immunocompromised persons benefit from COVID-19 mRNA vaccination but are less protected from severe COVID-19 outcomes than are immunocompetent persons. Immunocompromised persons receiving mRNA COVID-19 vaccines should receive 3 doses and a booster, consistent with CDC recommendations, practice nonpharmaceutical interventions, and, if infected, be monitored closely and considered early for proven therapies that can prevent severe outcomes."

JAMA Netw Open: Evaluation of a COVID-19 Vaccine Campaign and SARS-CoV-2 Infection and Mortality Among Adults Aged 60 Years And Older in a Middle-Income Country (29 October 2021)

> "Question: Is pragmatic, large-scale use of rAd26-rAd5, ChAdOx1, and BBIBP-CorV COVID-19 vaccines associated with reduction of morbidity, all-cause mortality, and COVID-19–related mortality in a population of individuals aged at least 60 years?
>
> Findings: In this cohort study of 663 602 participants, the use of COVID-19 vaccines was associated with a significant reduction in all-cause death, COVID-related death, and documented infection with the use of 1 dose and even more with the use of 2 doses.
>
> Meaning: These findings suggest that pragmatic use of available COVID-19 vaccines may significantly reduce morbidity and mortality."

NEJM: Waning Immunity after the BNT162b2 Vaccine in Israel (27 October 2021)

> "Background: In December 2020, Israel began a mass vaccination campaign against coronavirus disease 2019 (Covid-19) by administering the BNT162b2 vaccine, which led to a sharp curtailing of the outbreak. After a period with almost no cases of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) infection, a resurgent Covid-19 outbreak began in mid-June 2021. Possible reasons for the resurgence were reduced vaccine effectiveness against the delta (B.1.617.2) variant and waning immunity. The extent of waning immunity of the vaccine against the delta variant in Israel is unclear.
>
> Methods: We used data on confirmed infection and severe disease collected from an Israeli national database for the period of July 11 to 31, 2021, for all Israeli residents who had been fully vaccinated before June 2021. We used a Poisson regression model to compare rates of confirmed SARS-CoV-2 infection and severe Covid-19 among persons vaccinated during different time periods, with stratification according to age group and with adjustment for possible confounding factors.

> Results: Among persons 60 years of age or older, the rate of infection in the July 11-31 period was higher among persons who became fully vaccinated in January 2021 (when they were first eligible) than among those fully vaccinated 2 months later, in March (rate ratio, 1.6; 95% confidence interval [CI], 1.3 to 2.0). Among persons 40 to 59 years of age, the rate ratio for infection among those fully vaccinated in February (when they were first eligible), as compared with 2 months later, in April, was 1.7 (95% CI, 1.4 to 2.1). Among persons 16 to 39 years of age, the rate ratio for infection among those fully vaccinated in March (when they were first eligible), as compared with 2 months later, in May, was 1.6 (95% CI, 1.3 to 2.0). The rate ratio for severe disease among persons fully vaccinated in the month when they were first eligible, as compared with those fully vaccinated in March, was 1.8 (95% CI, 1.1 to 2.9) among persons 60 years of age or older and 2.2 (95% CI, 0.6 to 7.7) among those 40 to 59 years of age; owing to small numbers, the rate ratio could not be calculated among persons 16 to 39 years of age.
>
> Conclusions: These findings indicate that immunity against the delta variant of SARS-CoV-2 waned in all age groups a few months after receipt of the second dose of vaccine."

Safety and Efficacy

Nat Med: BNT162b2 and mRNA-1273 COVID-19 vaccine effectiveness against the SARS-CoV-2 Delta variant in Qatar (02 November 2021)

> "With the global expansion of the highly transmissible SARS-CoV-2 Delta (B.1.617.2) variant, we conducted a matched test-negative case–control study to assess the real-world effectiveness of COVID-19 messenger RNA vaccines against infection with Delta in Qatar's population. BNT162b2 effectiveness against any, symptomatic or asymptomatic, Delta infection was 45.3% (95% CI, 22.0–61.6%) ≥14 d after the first vaccine dose, but only 51.9% (95% CI, 47.0–56.4%) ≥14 d after the second dose, with 50% of fully vaccinated individuals receiving their second dose before 11 May 2021. Corresponding mRNA-1273 effectiveness ≥14 d after the first or second dose was 73.7% (95% CI, 58.1–83.5%) and 73.1% (95% CI, 67.5–77.8%), respectively. Notably, effectiveness against Delta-induced severe, critical or fatal disease was 93.4% (95% CI, 85.4–97.0%) for BNT162b2 and 96.1% (95% CI, 71.6–99.5%) for mRNA-1273 ≥ 14 d after the second dose. Our findings show robust effectiveness for both BNT162b2 and mRNA-1273 in preventing Delta hospitalization and death in Qatar's population, despite lower effectiveness in preventing infection, particularly for the BNT162b2 vaccine."

JAMA Intern Med: Safety Evaluation of the Second Dose of Messenger RNA COVID-19 Vaccines in Patients With Immediate Reactions to the First Dose (01 November 2021)

> "This case series study examines the safety of second doses of messenger RNA COVID-19 vaccines after first-dose allergic reactions….
>
> This multisite US study supports the safety of Pfizer-BioNTech or Moderna vaccine second dose administration in patients who report immediate and potentially allergic reactions after the first dose. Although mild symptoms were reported in 20% of patients with second dose administration, all patients who received a second dose safely completed their vaccination series and could use mRNA COVID-19 vaccines in the future when indicated. Second dose tolerance following reactions to the first dose argues that either many of these initial reactions are not all truly allergic reactions, or supports an allergic, but non–immunoglobulin E–mediated mechanism in which symptoms can typically be abated with premedications."

Lancet: Effectiveness of a third dose of the BNT162b2 mRNA COVID-19 vaccine for preventing severe outcomes in Israel: an observational study (29 October 2021)

> "Background: Many countries are experiencing a resurgence of COVID-19, driven predominantly by the delta (B.1.617.2) variant of SARS-CoV-2. In response, these countries are considering the administration of a third dose of mRNA COVID-19 vaccine as a booster dose to address potential waning immunity over time and reduced effectiveness against the delta variant. We aimed to use the data repositories of Israel's largest health-care organisation to evaluate the effectiveness of a third dose of the BNT162b2 mRNA vaccine for preventing severe COVID-19 outcomes.
>
> Methods: Using data from Clalit Health Services, which provides mandatory health-care coverage for over half of the Israeli population, individuals receiving a third vaccine dose between July 30, 2020, and Sept 23, 2021, were matched (1:1) to demographically and clinically similar controls who did not receive a third dose. Eligible participants had received the second vaccine dose at least 5 months before the recruitment date, had no previous documented SARS-CoV-2 infection, and had no contact with the health-care system in the 3 days before recruitment. Individuals who are health-care workers, live in long-term care facilities, or are medically confined to their homes were excluded. Primary outcomes were COVID-19-related admission to hospital, severe disease, and COVID-19-related death. The third dose effectiveness for each outcome was estimated as 1 – risk ratio using the Kaplan-Meier estimator.
>
> Findings: 1 158 269 individuals were eligible to be included in the third dose group. Following matching, the third dose and control groups each included 728 321 individuals. Participants had a median age of 52 years (IQR 37–68) and 51% were female. The median follow-up time was 13 days (IQR 6–21) in both groups. Vaccine effectiveness evaluated at least 7 days after receipt of the third dose, compared with receiving only two doses at least 5 months ago, was estimated to be 93% (231 events for two doses vs 29 events for three

> doses; 95% CI 88–97) for admission to hospital, 92% (157 vs 17 events; 82–97) for severe disease, and 81% (44 vs seven events; 59–97) for COVID-19-related death.
>
> Interpretation: Our findings suggest that a third dose of the BNT162b2 mRNA vaccine is effective in protecting individuals against severe COVID-19-related outcomes, compared with receiving only two doses at least 5 months ago."

MMWR: [COVID-19 Vaccination and Non–COVID-19 Mortality Risk — Seven Integrated Health Care Organizations, United States, December 14, 2020–July 31, 2021]() (29 October 2021)

> "What is already known about this topic? Although deaths after COVID-19 vaccination have been reported to the Vaccine Adverse Events Reporting System, few studies have been conducted to evaluate mortality not associated with COVID-19 among vaccinated and unvaccinated groups.
>
> What is added by this report? During December 2020–July 2021, COVID-19 vaccine recipients had lower rates of non–COVID-19 mortality than did unvaccinated persons after adjusting for age, sex, race and ethnicity, and study site.
>
> What are the implications for public health practice? There is no increased risk for mortality among COVID-19 vaccine recipients. This finding reinforces the safety profile of currently approved COVID-19 vaccines in the United States. All persons aged ≥12 years should receive a COVID-19 vaccine."

COVID-19 vaccines are safe
COVID-19 vaccines reduce risk for infection, serious illness, and death
A study of 11 million people found no increased risk of death among COVID-19 vaccine recipients
Get vaccinated as soon as possible
CDC
Data from December 2020 to July 2021
bit.ly/MMWR7043e2
MMWR

Clin Infect Dis: Measuring vaccine efficacy against infection and disease in clinical trials: sources and magnitude of bias in COVID-19 vaccine efficacy estimates (26 October 2021)

> "Background: Phase III trials have estimated COVID-19 vaccine efficacy (VE) against symptomatic and asymptomatic infection. We explore the direction and magnitude of potential biases in these estimates and their implications for vaccine protection against infection and against disease in breakthrough infections.
>
> Methods: We developed a mathematical model that accounts for natural and vaccine-induced immunity, changes in serostatus and imperfect sensitivity and specificity of tests for infection and antibodies. We estimated expected biases in VE against symptomatic, asymptomatic and any SARSCoV2 infections and against disease following infection for a range of vaccine characteristics and measurement approaches, and the likely overall biases for published trial results that included asymptomatic infections.
>
> Results: VE against asymptomatic infection measured by PCR or serology is expected to be low or negative for vaccines that prevent disease but not infection. VE against any infection is overestimated when asymptomatic infections are less likely to be detected than symptomatic infections and the vaccine protects against symptom development. A competing bias towards underestimation arises for estimates based on tests with imperfect specificity, especially when testing is performed frequently. Our model indicates considerable uncertainty in Oxford-AstraZeneca ChAdOx1 and Janssen Ad26.COV2.S VE against any infection, with slightly higher than published, bias-adjusted values of 59.0% (95% uncertainty interval [UI] 38.4 to 77.1) and 70.9% (95% UI 49.8 to 80.7) respectively.
>
> Conclusions: Multiple biases are likely to influence COVID-19 VE estimates, potentially explaining the observed difference between ChAdOx1 and Ad26.COV2.S vaccines. These biases should be considered when interpreting both efficacy and effectiveness study results."

Adverse Effects

JAMA Intern Med: Age- and Sex-Specific Incidence of Cerebral Venous Sinus Thrombosis Associated With Ad26.COV2.S COVID-19 Vaccination (01 November 2021)

> "This cohort study compares the sex- and age-adjusted incidence of cerebral venous sinus thrombosis [CVST] before the COVID-19 pandemic with that during the first 92 days after Ad26.COV2.S [Johnson & Johnson/Janssen] vaccination….
>
> In this population-based cohort study, we found that the CVST incidence rate 15 days after Ad26.COV2.S vaccination was significantly higher than the prepandemic rate. However, the higher rate of this rare adverse effect must be considered in the context of the effectiveness

> of the vaccine in preventing COVID-19 (absolute reduction of severe or critical COVID-19 of 940 per 100 000 PY)."

JAMA Netw Open: Association of Self-reported High-Risk Allergy History With Allergy Symptoms After COVID-19 Vaccination (26 October 2021)

> "Question: What is the association between self-reported history of high-risk allergy and allergic reactions after messenger RNA (mRNA) COVID-19 vaccination?
>
> Findings: In this cohort study of 52 998 health care employees, self-reported high-risk allergy history was associated with an increased risk of self-reported allergic reactions after mRNA COVID-19 vaccination. Most of the reported allergy symptoms, however, did not impede the completion of the 2-dose vaccine protocol.
>
> Meaning: This finding suggests that the mRNA COVID-19 vaccines are safe to receive for eligible individuals."

Nat Med: Neurological complications after first dose of COVID-19 vaccines and SARS-CoV-2 infection (25 October 2021)

> "Emerging reports of rare neurological complications associated with COVID-19 infection and vaccinations are leading to regulatory, clinical and public health concerns. We undertook a self-controlled case series study to investigate hospital admissions from neurological complications in the 28 days after a first dose of ChAdOx1nCoV-19 (n = 20,417,752) or BNT162b2 (n = 12,134,782), and after a SARS-CoV-2-positive test (n = 2,005,280). There was an increased risk of Guillain–Barré syndrome (incidence rate ratio (IRR), 2.90; 95% confidence interval (CI): 2.15–3.92 at 15–21 days after vaccination) and Bell's palsy (IRR, 1.29; 95% CI: 1.08–1.56 at 15–21 days) with ChAdOx1nCoV-19. There was an increased risk of hemorrhagic stroke (IRR, 1.38; 95% CI: 1.12–1.71 at 15–21 days) with BNT162b2. An independent Scottish cohort provided further support for the association between ChAdOx1nCoV and Guillain–Barré syndrome (IRR, 2.32; 95% CI: 1.08–5.02 at 1–28 days). There was a substantially higher risk of all neurological outcomes in the 28 days after a positive SARS-CoV-2 test including Guillain–Barré syndrome (IRR, 5.25; 95% CI: 3.00–9.18). Overall, we estimated 38 excess cases of Guillain–Barré syndrome per 10 million people receiving ChAdOx1nCoV-19 and 145 excess cases per 10 million people after a positive SARS-CoV-2 test. In summary, although we find an increased risk of neurological complications in those who received COVID-19 vaccines, the risk of these complications is greater following a positive SARS-CoV-2 test."

Vaccine Hesitancy

JAMA Netw Open: Attitudes and Intentions of US Veterans Regarding COVID-19 Vaccination (03 November 2021)

> "Question: What are veterans' attitudes and intentions associated with COVID-19 vaccination?
>
> Findings: In this survey study of 1178 US veterans in March 2021, 71% of veterans reported being vaccinated against COVID-19. Fears about side effects and worry about the newness of vaccines were the primary reasons given for not getting vaccinated, reflecting vaccine skepticism and deliberation.
>
> Meaning: These findings suggest that targeting veterans' concerns around the adverse effects and safety of COVID-19 vaccines through conversations with trusted Veterans Health Administration health care practitioners is key to increasing vaccine acceptance."

Sci Rep: Rather than inducing psychological reactance, requiring vaccination strengthens intentions to vaccinate in US populations (21 October 2021)

> "In a survey and three experiments (one preregistered with a nationally representative sample), we examined if vaccination requirements are likely to backfire, as commonly feared. We investigated if relative to encouraging free choice in vaccination, requiring a vaccine weakens or strengthens vaccination intentions, both in general and among individuals with a predisposition to experience psychological reactance. In the four studies, compared to free choice, requirements strengthened vaccination intentions across racial and ethnic groups, across studies, and across levels of trait psychological reactance. The results consistently suggest that fears of a backlash against vaccine mandates may be unfounded and that requirements will promote COVID-19 vaccine uptake in the United States."

Mass Vaccinations

Disaster Med Public Health Prep: Critical concepts for COVID-19 Mass Vaccination Site Operations (15 October 2021)

> "Mass vaccination campaigns have been used effectively to limit the impact of communicable disease on public health. However, the scale of the COVID19 vaccination campaign is unprecedented. Mass vaccination sites consolidate resources and experience into a single entity and are essential to achieving community ("herd") immunity rapidly, efficiently, and equitably. Healthcare systems, local and regional public health entities, emergency medical services, and private organizations can rapidly come together to solve problems and achieve success. As medical directors at several mass vaccination site across

> the United States, we describe key mass vaccination site concepts including site selection, operational models, patient flow, inventory management, staffing, technology, reporting, medical oversight, communication, and equity. Lessons learned from experience operating a diverse group of mass vaccination sites will help to inform not only sites operating during the current pandemic but may serve as a blueprint for future outbreaks of highly infectious communicable disease."

Breakthrough Infections, Reinfections, and Coinfections

News in Brief

"Even if they get breakthrough infections, vaccinated people don't get as sick with Covid-19, studies show" (CNN).

Breakthrough infections aren't just in humans: "3 vaccinated tigers have COVID-19 at the San Diego Zoo" (SDUT).

Journal Articles

JAMA: Durability of Antibody Levels After Vaccination With mRNA SARS-CoV-2 Vaccine in Individuals With or Without Prior Infection (01 November 2021)

> "This study examines antibody durability in individuals who received an mRNA SARS-CoV-2 vaccine with prior SARS-CoV-2 infection vs those without infection….
>
> Health care workers with prior SARS-CoV-2 infection followed by 2 doses of mRNA vaccine (3 independent exposures to spike antigen) developed higher spike antibody measurements than individuals with vaccination alone. Consistent with work comparing extended vaccine dosing intervals, the study showed that a longer interval between infection and first vaccine dose may enhance the antibody response."

JAMA: Association of Prior SARS-CoV-2 Infection With Risk of Breakthrough Infection Following mRNA Vaccination in Qatar (01 November 2021)

> "Question: Are persons vaccinated after SARS-CoV-2 infection better protected against breakthrough infection than those vaccinated without prior infection?
>
> Findings: In this cohort study of 1 531 736 mRNA-vaccinated individuals in Qatar, prior SARS-CoV-2 infection was associated with a statistically significant reduced hazard of breakthrough infection among recipients of both the BNT162b2 (Pfizer-BioNTech) (adjusted hazard ratio, 0.62) and the mRNA-1273 (Moderna) vaccines (adjusted hazard ratio, 0.40).

> Meaning: Prior SARS-CoV-2 infection was associated with a lower risk for breakthrough infection among persons receiving the SARS-CoV-2 mRNA vaccines; however, the observational study design precludes direct comparison of infection risk between the 2 vaccines."

Clin Infect Dis: Secondary Cases of Delta-Variant COVID-19 Among Vaccinated Healthcare Workers with Breakthrough Infections is Rare (25 October 2021)

> "A retrospective cohort study at four academic medical centers with high COVID-19 vaccination rates evaluated breakthrough SARS-CoV-2 Delta variant (B.1.617.2) infections in vaccinated healthcare workers. Few work-related secondary cases were identified. Breakthrough cases were largely due to unmasked social activities outside of work."

Treatments and Management

News in Brief

"Gene linked to doubling risk of COVID-19 death found by UK scientists" (Reuters).

"Britain authorizes Merck's molnupiravir, the world's first approval of oral covid-19 treatment pill" (WP).

"Pfizer antiviral pill reduced risk of covid hospitalization and death by 89 percent in high-risk people, company study shows" (WP; see also: Pfizer press release).

"Ivermectin-COVID-19 study retracted; authors blame file mixup" (Retraction Watch).

Webinars and Events

WHAT:	Monoclonals and More: Issues and Opportunities with Early COVID-19 Treatment Options — from ASPR TRACIE
WHEN:	Friday, 12 November 2021 1230–1400 EST
DETAILS:	"In the Updated COVID-19 Treatment Guidelines on Prioritization of Anti-SARS-CoV-2 Monoclonal Antibodies for the Treatment or Prevention of SARS-CoV-2 Infection when there are Logistical or Supply Constraints, the COVID-19 Treatment Guidelines Panel recommends the use of anti-SARS-CoV-2 monoclonal antibodies (mAbs) for individuals who are at high risk for progression to severe COVID-19.

Presenters on this webinar will review some of the most current recommendations for use of mAbs and upcoming therapies and the challenges and opportunities that they may pose in conjunction with mAb and other treatments (e.g., prioritization and distribution). Speakers will also highlight operational principles for a scaled strategy for use of these therapeutics in a scarce resource situation."

REGISTER: https://register.gotowebinar.com/register/8428334288843216400

Journal Articles

Ann Intern Med: Update on and Future Directions for Use of Anti–SARS-CoV-2 Antibodies: National Institutes of Health Summit on Treatment and Prevention of COVID-19 (02 November 2021)

> "As the fourth wave of the SARS-CoV-2 pandemic encircles the globe, there remains an urgent challenge to identify safe and effective treatment and prevention strategies that can be implemented in a range of health care and clinical settings. Substantial advances have been made in the use of anti-SARS-CoV-2 antibodies to mitigate the morbidity and mortality associated with COVID-19. On 15 June 2021, the National Institutes of Health, in collaboration with the U.S. Food and Drug Administration, convened a virtual summit to summarize existing knowledge on anti-SARS-CoV-2 antibodies and to identify key unanswered scientific questions to further catalyze the clinical development and implementation of antibodies."

JAMA: Association Between COVID-19 Diagnosis and In-Hospital Mortality in Patients Hospitalized With ST-Segment Elevation Myocardial Infarction (29 October 2021)

> "Question: In patients with ST-segment elevation myocardial infarction (STEMI), is a concomitant diagnosis of COVID-19 associated with differences in clinical outcome?
>
> Findings: In this retrospective cohort study that included 80 449 patients, the rates of in-hospital mortality for patients with vs without a concomitant diagnosis of COVID-19 were 15.2% vs 11.2% among those with out-of-hospital STEMI and 78.5% vs 46.1% among those with in-hospital STEMI; both differences were statistically significant.
>
> Meaning: Among patients with STEMI, a concomitant diagnosis of COVID-19 was associated with significantly higher rates of in-hospital mortality."

MMWR: Severity of Disease Among Adults Hospitalized with Laboratory-Confirmed COVID-19 Before and During the Period of SARS-CoV-2 B.1.617.2 (Delta) Predominance — COVID-NET, 14 States, January–August 2021 (29 October 2021)

> "What is already known about this topic? The SARS-CoV-2 B.1.617.2 (Delta) variant is highly transmissible; however, whether it causes more severe disease in adults has been uncertain.
>
> What is added by this report? Analysis of COVID-NET data from 14 states found no significant increases in the proportion of hospitalized COVID-19 patients with severe outcomes during the Delta period. The proportion of hospitalized unvaccinated COVID-19 patients aged 18–49 years significantly increased during the Delta period.
>
> What are the implications for public health practice? Lower vaccination coverage in adults aged 18–49 years likely contributed to the increase in hospitalized patients during the Delta period. COVID-19 vaccination is critical for all eligible adults, including adults aged <50 years who have relatively low vaccination rates compared with older adults."

Clin Infect Dis: A randomized, placebo-controlled clinical trial of bamlanivimab and etesevimab together in high-risk ambulatory patients with COVID-19 and validation of the prognostic value of persistently high viral load (28 October 2021)

> "Background: Based on interim analyses and modelling data, lower doses of bamlanivimab and etesevimab together (700mg/1400mg) were investigated to determine optimal dose and expand availability of treatment.
>
> Methods: This Phase 3 portion of the BLAZE-1 trial characterized the effect of bamlanivimab with etesevimab on overall patient clinical status and virologic outcomes in ambulatory patients ≥12 years old, with mild-to-moderate COVID-19, and ≥1 risk factor for progressing to severe COVID-19 and/or hospitalization. Bamlanivimab and etesevimab together (700mg/1400mg) or placebo were infused intravenously within 3 days of patients' first positive COVID-19 test.
>
> Results: 769 patients were infused (median age [range]; 56.0 years [12, 93], 30.3% of patients ≥65 years of age and median duration of symptoms; 4 days). By day 29, 4/511 patients (0.8%) in the antibody treatment group had a COVID-19-related hospitalization or any-cause death, as compared with 15/258 patients (5.8%) in the placebo group (Δ[95% CI]=-5.0 [-8.0, -2.1], p<0.001). No deaths occurred in the bamlanivimab and etesevimab group compared with 4 deaths (all COVID-19-related) in the placebo group. Patients receiving antibody treatment had a greater mean reduction in viral load from baseline to Day 7 (Δ[95% CI]=-0.99 [-1.33, -0.66], p<0.0001) compared with those receiving placebo. Persistently high viral load at Day 7 correlated with COVID-19-related hospitalization or any-cause death by Day 29 in all BLAZE-1 cohorts investigated.

> Conclusions: These data support the use of bamlanivimab and etesevimab (700mg/1400mg) for ambulatory patients at high risk for severe COVID-19. Evolution of SARS-CoV-2 variants will require continued monitoring to determine the applicability of this treatment."

Lancet Glob Health: Effect of early treatment with fluvoxamine on risk of emergency care and hospitalisation among patients with COVID-19: the TOGETHER randomised, platform clinical trial (27 October 2021)

> "Background: Recent evidence indicates a potential therapeutic role of fluvoxamine for COVID-19. In the TOGETHER trial for acutely symptomatic patients with COVID-19, we aimed to assess the efficacy of fluvoxamine versus placebo in preventing hospitalisation defined as either retention in a COVID-19 emergency setting or transfer to a tertiary hospital due to COVID-19.
>
> Methods: This placebo-controlled, randomised, adaptive platform trial done among high-risk symptomatic Brazilian adults confirmed positive for SARS-CoV-2 included eligible patients from 11 clinical sites in Brazil with a known risk factor for progression to severe disease. Patients were randomly assigned (1:1) to either fluvoxamine (100 mg twice daily for 10 days) or placebo (or other treatment groups not reported here). The trial team, site staff, and patients were masked to treatment allocation. Our primary outcome was a composite endpoint of hospitalisation defined as either retention in a COVID-19 emergency setting or transfer to tertiary hospital due to COVID-19 up to 28 days post-random assignment on the basis of intention to treat. Modified intention to treat explored patients receiving at least 24 h of treatment before a primary outcome event and per-protocol analysis explored patients with a high level adherence (>80%). We used a Bayesian analytic framework to establish the effects along with probability of success of intervention compared with placebo. The trial is registered at ClinicalTrials.gov (NCT04727424) and is ongoing.
>
> Findings: The study team screened 9803 potential participants for this trial. The trial was initiated on June 2, 2020, with the current protocol reporting randomisation to fluvoxamine from Jan 20 to Aug 5, 2021, when the trial arms were stopped for superiority. 741 patients were allocated to fluvoxamine and 756 to placebo. The average age of participants was 50 years (range 18-102 years); 58% were female. The proportion of patients observed in a COVID-19 emergency setting for more than 6 h or transferred to a teritary hospital due to COVID-19 was lower for the fluvoxamine group compared with placebo (79 [11%] of 741 vs 119 [16%] of 756); relative risk [RR] 0·68; 95% Bayesian credible interval [95% BCI]: 0·52-0·88), with a probability of superiority of 99·8% surpassing the prespecified superiority threshold of 97·6% (risk difference 5·0%). Of the composite primary outcome events, 87% were hospitalisations. Findings for the primary outcome were similar for the modified intention-to-treat analysis (RR 0·69, 95% BCI 0·53-0·90) and larger in the per-protocol analysis (RR 0·34, 95% BCI, 0·21-0·54). There were 17 deaths in the fluvoxamine group and

> 25 deaths in the placebo group in the primary intention-to-treat analysis (odds ratio [OR] 0·68, 95% CI: 0·36-1·27). There was one death in the fluvoxamine group and 12 in the placebo group for the per-protocol population (OR 0·09; 95% CI 0·01-0·47). We found no significant differences in number of treatment emergent adverse events among patients in the fluvoxamine and placebo groups.
>
> Interpretation: Treatment with fluvoxamine (100 mg twice daily for 10 days) among high-risk outpatients with early diagnosed COVID-19 reduced the need for hospitalisation defined as retention in a COVID-19 emergency setting or transfer to a tertiary hospital."

NEJM: Early Treatment for Covid-19 with SARS-CoV-2 Neutralizing Antibody Sotrovimab (27 October 2021)

> "Background: Coronavirus disease 2019 (Covid-19) disproportionately results in hospitalization or death in older patients and those with underlying conditions. Sotrovimab is a pan-sarbecovirus monoclonal antibody that was designed to prevent progression of Covid-19 in high-risk patients early in the course of disease.
>
> Methods: In this ongoing, multicenter, double-blind, phase 3 trial, we randomly assigned, in a 1:1 ratio, nonhospitalized patients with symptomatic Covid-19 (≤5 days after the onset of symptoms) and at least one risk factor for disease progression to receive a single infusion of sotrovimab at a dose of 500 mg or placebo. The primary efficacy outcome was hospitalization (for >24 hours) for any cause or death within 29 days after randomization.
>
> Results: In this prespecified interim analysis, which included an intention-to-treat population of 583 patients (291 in the sotrovimab group and 292 in the placebo group), 3 patients (1%) in the sotrovimab group, as compared with 21 patients (7%) in the placebo group, had disease progression leading to hospitalization or death (relative risk reduction, 85%; 97.24% confidence interval, 44 to 96; P = 0.002). In the placebo group, 5 patients were admitted to the intensive care unit, including 1 who died by day 29. Safety was assessed in 868 patients (430 in the sotrovimab group and 438 in the placebo group). Adverse events were reported by 17% of the patients in the sotrovimab group and 19% of those in the placebo group; serious adverse events were less common with sotrovimab than with placebo (in 2% and 6% of the patients, respectively).
>
> Conclusions: Among high-risk patients with mild-to-moderate Covid-19, sotrovimab reduced the risk of disease progression. No safety signals were identified."

Pre-Existing Conditions, Comorbidities, and Impact on Other Health Issues

News in Brief

Long read: "Diet-related diseases pose a major risk for Covid-19. But the U.S. overlooks them — Other countries have been galvanized to confront diet issues. The U.S. has had no such wakeup call" (Politico).

Journal Articles

Eur Heart J: Clinical presentation, disease course, and outcome of COVID-19 in hospitalized patients with and without pre-existing cardiac disease: a cohort study across 18 countries (04 November 2021)

> "Aims: Patients with cardiac disease are considered high risk for poor outcomes following hospitalization with COVID-19. The primary aim of this study was to evaluate heterogeneity in associations between various heart disease subtypes and in-hospital mortality.
>
> Methods and results: We used data from the CAPACITY-COVID registry and LEOSS study. Multivariable Poisson regression models were fitted to assess the association between different types of pre-existing heart disease and in-hospital mortality. A total of 16 511 patients with COVID-19 were included (21.1% aged 66-75 years; 40.2% female) and 31.5% had a history of heart disease. Patients with heart disease were older, predominantly male, and often had other comorbid conditions when compared with those without. Mortality was higher in patients with cardiac disease (29.7%; n = 1545 vs. 15.9%; n = 1797). However, following multivariable adjustment, this difference was not significant [adjusted risk ratio (aRR) 1.08, 95% confidence interval (CI) 1.02-1.15; P = 0.12 (corrected for multiple testing)]. Associations with in-hospital mortality by heart disease subtypes differed considerably, with the strongest association for heart failure (aRR 1.19, 95% CI 1.10-1.30; P < 0.018) particularly for severe (New York Heart Association class III/IV) heart failure (aRR 1.41, 95% CI 1.20-1.64; P < 0.018). None of the other heart disease subtypes, including ischaemic heart disease, remained significant after multivariable adjustment. Serious cardiac complications were diagnosed in <1% of patients.
>
> Conclusion: Considerable heterogeneity exists in the strength of association between heart disease subtypes and in-hospital mortality. Of all patients with heart disease, those with heart failure are at greatest risk of death when hospitalized with COVID-19. Serious cardiac complications are rare during hospitalization."
>
> See also: editorial, which includes visual abstract showing bidirectional relationship between CVD and COVID-19 disease

Hum Reprod: Effects of COVID-19 and mRNA vaccines on human fertility (03 November 2021)

> "The coronavirus disease 2019 (COVID-19), which is caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), has precipitated a global health crisis of unprecedented proportions. Because of its severe impact, multiple COVID-19 vaccines are being rapidly developed, approved and manufactured. Among them, mRNA vaccines are considered as ideal candidates with special advantages to meet this challenge. However, some serious adverse events have been reported after their application, significantly increasing concerns about the safety and efficacy of the vaccines and doubts about the necessity of vaccination. Although several fertility societies have announced that COVID-19 mRNA vaccines are unlikely to affect fertility, there is no denying that the current evidence is very limited, which is one of the reasons for vaccine hesitancy in the population, especially in pregnant women. Herein, we provide an in-depth discussion on the involvement of the male and female reproductive systems during SARS-CoV-2 infection or after vaccination. On one hand, despite the low risk of infection in the male reproductive system or fetus, COVID-19 could pose an enormous threat to human reproductive health. On the other hand, our review indicates that both men and women, especially pregnant women, have no fertility problems or increased adverse pregnancy outcomes after vaccination, and, in particular, the benefits of maternal antibodies transferred through the placenta outweigh any known or potential risks. Thus, in the case of the rapid spread of COVID-19, although further research is still required, especially a larger population-based longitudinal study, it is obviously a wise option to be vaccinated instead of suffering from serious adverse symptoms of virus infection."

JAMA Netw Open: Trends in Insulin Prescribing for Patients With Diabetes During the COVID-19 Pandemic in the US (03 November 2021)

> "This cross-sectional study compares the number of insulin prescriptions filled before and during the COVID-19 pandemic….
>
> This study found a considerable decrease in the average number of weekly insulin prescription fills during the COVID-19 pandemic. Reduced contact with prescribing clinicians during the pandemic, rationing, previous stockpiling, or loss of insurance could explain the decline."

Open Forum Infect Dis: Bamlanivimab efficacy in older and high BMI outpatients with Covid-19 selected for treatment in a lottery-based allocation process (03 November 2021)

> "Background: Given the challenges associated with timely delivery of monoclonal antibody (mAb) therapy to outpatients with Covid-19 who are most likely to benefit, it is critical to understand the effectiveness of such therapy outside the context of clinical trials.

> Methods: Case-control study of 1257 adult outpatients with Covid-19, ≥ 65 years of age or with BMI ≥ 35, who were entered into a lottery for mAb therapy.
>
> Results: Patients who were called to be offered mAb therapy had a statistically significant, 44% reduction in the odds of hospitalization within 30 days of a positive SARS-CoV-2 test compared with those who were not called (OR 0.56, 95% CI [0.36, 0.89], P=.01). Patients who actually received bamlanivimab had a statistically significant, 68% reduction in the odds of hospitalization compared with those who did not receive bamlanivimab (OR 0.32, 95% CI [0.11, 0.93], P=0.04). There was no statistically significant difference in the odds of death between patients who were called and patients who were not called (OR 1.79, 95% CI [0.52, 6.17], P=0.35), but there was a statistically significant difference in the odds of death between patients who received bamlanivimab and those who did not (OR 0.03, 95% CI [0, 0.25), P<0.01).
>
> Conclusions: This study supports the effectiveness of bamlanivimab in reducing Covid-19 related hospitalizations in patients ≥ 65 or with BMI ≥ 35 and suggests a mortality benefit."

JAMA Netw Open: Immunogenicity Rates After SARS-CoV-2 Vaccination in People With End-stage Kidney Disease: A Systematic Review and Meta-analysis (28 October 2021)

> "Question: What are the immunogenicity rates in people with end-stage kidney disease receiving SARS-CoV-2 vaccines?
>
> Findings: This systematic review and meta-analysis of 32 studies found that patients receiving dialysis had lower immunogenicity rates after first and second vaccine doses than those not receiving dialysis. Prevalence of diabetes had an inverse linear association with immunogenicity rate.
>
> Meaning; These findings suggest that the immunogenicity rate after vaccination was lower in patients receiving dialysis and that diabetes might be a risk factor for nonresponse to vaccination."

JAMA Oncol: Evaluation of COVID-19 Mortality and Adverse Outcomes in US Patients With or Without Cancer (28 October 2021)

> "Question: What are the rates of death, mechanical ventilation, intensive care unit stay, and hospitalization among patients with COVID-19 with or without cancer?
>
> Findings: In this cohort study of 507 307 patients with COVID-19, those with cancer who received anticancer treatment within 3 months before COVID-19 diagnosis had an increased risk of death, intensive care unit admission, and hospitalization. Patients without recent cancer treatment had similar or better outcomes than patients without cancer.
>
> Meaning: The results of this study have risk stratification and resource use implications for patients, clinicians, and health care systems."

JAMA Netw Open: Association of COVID-19 With New Waiting List Registrations and Liver Transplantation for Alcoholic Hepatitis in the United States (26 October 2021)

> "This cross-sectional study examines trends in new waiting list registrations and liver transplantation for alcoholic hepatitis before and during the COVID-19 pandemic in the US….
>
> This cross-sectional study found that waiting list registrations and DDLTs for AH increased significantly during COVID-19, exceeding the volumes forecasted by pre–COVID-19 trends by more than 50%, whereas trends for AC and non-ALD remained unchanged. While we cannot confirm causality, this disproportionate increase in association with increasing alcohol sales may indicate a relationship with known increases in alcohol misuse during COVID-19."

JAMA Netw Open: Assessment of Cognitive Function in Patients After COVID-19 Infection (22 October 2021)

> "This cross-sectional study examines rates of cognitive impairment among patients who survived COVID-19 and whether the care setting was associated with cognitive impairment rates….
>
> In this study, we found a relatively high frequency of cognitive impairment several months after patients contracted COVID-19. Impairments in executive functioning, processing speed, category fluency, memory encoding, and recall were predominant among hospitalized patients. The relative sparing of memory recognition in the context of impaired encoding and recall suggests an executive pattern. This pattern is consistent with early reports describing a dysexecutive syndrome after COVID-19 and has considerable implications for occupational, psychological, and functional outcomes."

Influenza Other Respir Viruses: Clinical manifestations of COVID-19 differ by age and obesity status (19 October 2021)

> "Background: Age and obesity status are associated with severe outcomes among hospitalized individuals with COVID-19. It remains unclear whether age and obesity are risk factors for milder COVID-19 illness.
>
> Methods: We prospectively enrolled SARS-CoV-2-exposed individuals. Participants recorded symptoms for 28 days and were tested for SARS-CoV-2 by reverse transcription polymerase chain reaction (RT-PCR) and serology. Type, number, and duration of symptoms and SARS-CoV-2 laboratory parameters were compared by age and obesity status.
>
> Results: Of 552 individuals enrolled from June 2020 to January 2021, 470 (85.1%) tested positive for SARS-CoV-2 including 261 (55.5%) adults ≥18 years, 61 (13.0%) adolescents 12-17 years, and 148 (31.5%) children <12 years. Children had fewer symptoms (median 2 vs. 3,

> p < 0.001) lasting fewer days (median 5 vs. 7, p < 0.001) compared with adolescents/adults. Body mass index of 300 (63.8%) individuals classified with overweight or obesity (OWOB). Individuals with OWOB suffered more symptoms compared with individuals without OWOB (median 3 vs. 2, p = 0.037), including more cough and shortness of breath (p = 0.023 and 0.026, respectively). Adolescents with OWOB were more likely to be symptomatic (66.7% vs. 34.2%, p = 0.008) and have longer respiratory symptoms (median 7 vs. 4 days, p = 0.049) compared with adolescents without OWOB. Lower RT-PCR Ct values were found in children and symptomatic individuals compared with adolescent and adults and asymptomatic individuals, respectively (p = 0.001 and 0.022).
>
> Conclusions: Adolescents and adults with OWOB experience more respiratory symptoms from COVID-19 despite similar viral loads. These findings underscore the importance of vaccinating individuals with OWOB."

Long COVID / Post-COVID Period

News in Brief

"Do patients hold the answer to the mystery of long COVID? — Listening is paramount to better understand this novel condition" (Medpage).

"'I barely function some days': Covid 'long haulers' struggle to work amid labor shortage" (CNN).

Journal Articles

BMJ Open Respir Res: Patient symptoms and experience following COVID-19: results from a UK-wide survey (03 November 2021)

> "Objectives: To investigate the experience of people who continue to be unwell after acute COVID-19, often referred to as 'long COVID', both in terms of their symptoms and their interactions with healthcare.
>
> Design: We conducted a mixed-methods analysis of responses to a survey accessed through a UK online post-COVID-19 support and information hub, between April and December 2020, about people's experiences after having acute COVID-19.
>
> Participants: 3290 respondents, 78% female, 92.1% white ethnicity and median age range 45-54 years; 12.7% had been hospitalised. 494(16.5%) completed the survey between 4 and 8 weeks of the onset of their symptoms, 641(21.4%) between 8 and 12 weeks and 1865 (62.1%) >12 weeks after.

> Results: The ongoing symptoms most frequently reported were: breathing problems (92.1%), fatigue (83.3%), muscle weakness or joint stiffness (50.6%), sleep disturbances (46.2%), problems with mental abilities (45.9%), changes in mood, including anxiety and depression (43.1%) and cough (42.3%). Symptoms did not appear to be related to the severity of the acute illness or to the presence of pre-existing medical conditions. Analysis of free-text responses revealed three main themes: (1) experience of living with COVID-19: physical and psychological symptoms that fluctuate unpredictably; (2) interactions with healthcare that were unsatisfactory; (3) implications for the future: their own condition, society and the healthcare system, and the need for research CONCLUSION: Consideration of patient perspectives and experiences will assist in the planning of services to address problems persisting in people who remain symptomatic after the acute phase of COVID-19."

Monaldi Arch Chest Dis: Systemic corticosteroids for management of 'long-COVID': an evaluation after 3 months of treatment (03 November 2021)

> "Some patients even 4 weeks after Corona Virus Disease 2019 (COVID-19) remain to be symptomatic and are known as "long-COVID". In the present study we performed the follow up evaluation at 3 months of long-COVID patients, after treatment with systemic steroids. During the study duration, out of the 4,542 patients managed in the outpatient department of the particular unit, there were 49 patients of Long-COVID. The patients having abnormal computed tomography (CT) alongwith resting hypoxia or exertional desaturation were treated with systemic steroid (deflazacort) in tapering doses for 8-10 weeks. We retrospectively analysed the clinical and radiological findings of these patients at first presentation and at about 3 months of follow up visit. On follow up, all the 49 long-COVID patients showed improvement. The occurrence of breathlessness decreased from 91.83% to 44.89% ($p<0.001$) and cough from 77.55% to 8.16% ($p<0.001$). Twenty-four patients were prescribed systemic steroids. Out of these, nearly 58% patients had MMRC grade 4 breathlessness, which decreased to < 2 MMRC in about 86% of these patients. MMRC grade (median) decreased from 3 to 1 ($p<0.001$). Majority of patients who were tachypnoeic and hypoxic at rest (n=7) showed improvement (71%), post-treatment with corticosteroids. Occurrence of normal chest X-ray increased from 12% to 71% ($p<0.001$). All these patients had abnormal CT thorax initially, and post-treatment 25% had normal CT thorax. Hence, we conclude that systemic steroids are helpful in hastening recovery of select subset of long-COVID patients. Simultaneously, we should be cautious of immunosuppressive effects of steroids like tuberculosis reactivation, especially in tuberculosis endemic countries. These findings have therapeutic implications and may serve as guidance for future approach to the management of 'long-COVID' with pulmonary sequalae."

Infect Agent Cancer: Strategies to evaluate outcomes in long-COVID-19 and post-COVID survivors (30 October 2021)

> "SARS-CoV-2 infection can impact the physical, cognitive, mental health of patients, especially in those recovered in intensive care units. Moreover, it was proved that the effects of the virus may persist for weeks or months. The term long-COVID or post-COVID syndrome is commonly used for indicating a variety of physical and psychological symptoms that continue after the resolution of the acute phase. This narrative review is aimed at providing an updated overview of the impact of physical, cognitive, and psychological health disorders in COVID-19 survivors, by summarizing the data already published in literature in the last year. Studies cited were found through PubMed searches. We also presented an overview of the post-COVID-19 health consequences on three important aspects: nutritional status, neurological disorders, and physical health. Moreover, to activate a correct health planning policy, a multidisciplinary approach for addressing the post- COVID-19 issue, has been proposed. Finally, the involvement of health professionals is necessary even after the pandemic, to reduce expected post-pandemic psychosocial responses and mental health disorders."

Women's Health, Pregnancy, and Perinatal Care

News in Brief

"Despite higher COVID risk, most pregnant Americans remain unvaccinated" (NPR).

Journal Articles

JAMA Netw Open: Immune Response of Neonates Born to Mothers Infected With SARS-CoV-2 (03 November 2021)

> "Question: What is the association of maternal SARS-CoV-2 infection with immune response in offspring in the first 2 months of life?
>
> Findings: In this cohort study of 21 mothers who tested positive for SARS-CoV-2 at delivery and their 22 newborns, there was 1 case of potential mother-infant vertical virus transmission and 1 case of horizontal virus transmission. Infants who received breastmilk during the first 2 months of life had significantly higher spike-specific salivary IgA antibody levels compared with formula-fed infants, and IgA spike immune complexes were detected in breastmilk.

> Meaning: Findings suggest that maternal protection goes beyond passive immunity, with immune complexes in breastmilk stimulating the active development of the neonatal immune system."

Pediatric Population

News in Brief

"How COVID-19 stole 'children's joy,' sparking a mental health emergency" (VOA).

Long read: "Teen girls are developing tics. Doctors say TikTok could be a factor — When teens started turning up in doctors' offices with sudden, severe physical tics, specialists suspected social media: The girls had been watching Tourette syndrome TikTok videos" (WSJ [subscription login needed]; see also: Mov Disord Clin Pract article).

Journal Articles

JAMA Pediatr: Screen Time Use Among US Adolescents During the COVID-19 Pandemic: Findings From the Adolescent Brain Cognitive Development (ABCD) Study (01 November 2021)

> "This cross-sectional study reviews findings from the Adolescent Brain Cognitive Development (ABCD) Study on digital media use by US youths during the COVID-19 pandemic….
>
> In this cross-sectional study of a large, national sample of adolescents surveyed early in the COVID-19 pandemic, we found that the mean total daily screen use was 7.70 h/d. This is higher than prepandemic estimates (3.8 h/d) from the same cohort at baseline, although younger age and slightly different screen time categories could also account for differences…. Different screen use modalities may have differential positive or negative consequences for adolescents' well-being during the COVID-19 pandemic. Adolescents experiencing stress and poor mental health may use screens to manage negative feelings or withdraw from stressors. Although some screen modalities may be used to promote social connection, higher coping behaviors and social support in this sample were associated with lower total screen usage."

Pediatrics: Deaths in Children and Adolescents Associated With COVID-19 and MIS-C in the United States (01 November 2021)

> "Objectives: To describe the demographics, clinical characteristics, and hospital course among persons <21 years of age with a severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)-associated death.
>
> Methods: We conducted a retrospective case series of suspected SARS-CoV-2-associated deaths in the United States in persons <21 years of age during February 12 to July 31, 2020. All states and territories were invited to participate. We abstracted demographic and clinical data, including laboratory and treatment details, from medical records.
>
> Results: We included 112 SARS-CoV-2-associated deaths from 25 participating jurisdictions. The median age was 17 years (IQR 8.5-19 years). Most decedents were male (71, 63%), 31 (28%) were Black (non-Hispanic) persons, and 52 (46%) were Hispanic persons. Ninety-six decedents (86%) had at least 1 underlying condition; obesity (42%), asthma (29%), and developmental disorders (22%) were most commonly documented. Among 69 hospitalized decedents, common complications included mechanical ventilation (75%) and acute respiratory failure (82%). The sixteen (14%) decedents who met multisystem inflammatory syndrome in children (MIS-C) criteria were similar in age, sex, and race and/or ethnicity to decedents without MIS-C; 11 of 16 (69%) had at least 1 underlying condition.
>
> Conclusions: SARS-CoV-2-associated deaths among persons <21 years of age occurred predominantly among Black (non-Hispanic) and Hispanic persons, male patients, and older adolescents. The most commonly reported underlying conditions were obesity, asthma, and developmental disorders. Decedents with coronavirus disease 2019 were more likely than those with MIS-C to have underlying medical conditions."

JAMA Neurol: Anti–SARS-CoV-2 and Autoantibody Profiles in the Cerebrospinal Fluid of 3 Teenaged Patients With COVID-19 and Subacute Neuropsychiatric Symptoms (25 October 2021)

> "Question: Are anti–SARS-CoV-2 or antineural antibodies present in the cerebrospinal fluid of pediatric patients with COVID-19 and neuropsychiatric symptoms?
>
> Findings: In this case series of 3 pediatric patients with subacute neuropsychiatric impairment, 2 had intrathecal anti–SARS-CoV-2 antibodies as well as intrathecal antineural antibodies. Anti–transcription factor 4 (TCF4) autoantibodies in one patient who responded to immunotherapy were validated.
>
> Meaning: A subset of pediatric patients with COVID-19 and subacute neuropsychiatric symptoms have intrathecal antineural autoantibodies, suggesting central nervous system autoimmunity in pediatric patients with COVID-19 and recent neuropsychiatric symptoms."

Healthcare Workers

News in Brief

"Labs with no one to run them: why public health workers are fleeing the field" (KHN).

"The U.S. needs more nurses, but nursing schools don't have enough slots" (NPR).

Long read: "Healthcare workers of yore — Looking past conventional histories of medicine we see that women delivered much of medieval healthcare. Just as today" (Aeon).

Journal Articles

Occup Med: Potential risk factors associated with COVID-19 in health care workers (03 November 2021)

> "Background: Health care workers (HCWs) have been recognized as being at higher risk for coronavirus disease 2019 (COVID-19) infection; however, relevant factors and magnitude have not been clearly elucidated.
>
> Aim: This study was aimed to describe COVID-19 infections among hospital employees at a large tertiary care hospital located in Ontario, Canada from March to July 2020, towards better understanding potential risk factors.
>
> Methods: Data on all HCWs with either a positive COVID test or a high-risk exposure from March to July 2020 were analyzed. HCWs with positive COVID test results and high-risk exposures were described. Those who developed COVID-19 following high-risk exposure were compared to those who did not. Data were also analyzed to determine trends over time.
>
> Results: Over the period of observation, 193 staff (2% of total working staff) had a positive COVID-19 test. Incidence of HCW infections closely followed community incidence. Overall, 31% of COVID-19 cases were deemed occupationally acquired. Of these, 41% were acquired from a patient, with the remainder (59%) from fellow staff. Over the same period, 204 staff were identified as having a high-risk exposure. The majority of exposures (55%) were patient-associated, with the remaining (45%) resulting from staff-to-staff contact. Overall, 13% went on to develop COVID-19. Of these cases, 58% were patient-associated and 42% were a result of staff-to-staff transmission.
>
> Conclusions: HCWs are at risk for work-related COVID-19. Given the number of infections attributed to staff–staff transmission, greater attention could be paid to implementing prevention measures in non-clinical areas."

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Occup Med: The relative importance of work-related psychosocial factors in physician burnout (03 November 2021)

> "Background: Identifying the most significant risk factors for physician burnout can help to define the priority areas for burnout prevention. However, not much is known about the relative importance of these risk factors.
>
> Aims: This study was aimed to examine the relative importance of multiple work-related psychosocial factors in predicting burnout dimensions among physicians.
>
> Methods: In a cross-sectional sample of 2423 Finnish physicians, dominance analysis was used to estimate the proportionate contribution of psychosocial factors to emotional exhaustion, depersonalization and reduced personal accomplishment. The psychosocial factors included job demands (time pressure, patient-related stress, lack of support, stress related to information systems, work–family conflict) and job resources (job control, team climate, organizational justice).
>
> Results: Together, psychosocial factors explained 50% of the variance in emotional exhaustion, 24% in depersonalization and 11% in reduced professional efficacy. Time pressure was the most important predictor of emotional exhaustion (change in total variance explained ΔR2 = 45%), and patient-related stress was the most important predictor of both depersonalization (ΔR2 = 52%) and reduced professional accomplishment (ΔR2 = 23%). Stress related to information systems was the least important predictor of the burnout dimensions (ΔR2 = 1–2%).
>
> Conclusions: Psychosocial factors in physicians' work are differently associated with the dimensions of burnout. Among the factors, the most significant correlates of burnout are job demands in the form of time pressure and patient-related stress."

Clin Infect Dis: Effectiveness of BNT162b2 mRNA COVID-19 vaccine against acquisitions of SARS-CoV-2 among health care workers in long-term care facilities: a prospective cohort study (26 October 2021)

> "Objective: We assessed vaccine effectiveness (VE) of BNT162b2 mRNA COVID-19 vaccine against SARS-CoV-2 acquisition among health care workers (HCWs) of long-term care facilities (LTCFs).
>
> Methods: This prospective study, in the framework of "Senior Shield" program in Israel, included routine, weekly nasopharyngeal SARS-CoV-2 RT-PCR testing from all LTCF HCWs since July 2020. All residents and 75% of HCWs were immunized between December 2020 and January 2021. The analysis was limited to HCWs adhering to routine testing. Fully vaccinated (14+ days after second dose; n=6960) and unvaccinated HCWs (n=2202) were simultaneously followed until SARS-CoV-2 acquisition, or end of follow-up, April 11, 2021. Hazard ratios (HRs) for vaccination vs. no vaccination were calculated (Cox proportional

> hazards regression models, adjusting for socio-demographics and residential-area COVID-19 incidence). VE was calculated as [(1- HR)×100]. RT-PCR cycle threshold values (Cts) were compared between vaccinated and unvaccinated HCWs.
>
> Results: At >14 days post second dose, 40 vaccinated HCWs acquired SARS-CoV-2 (median follow-up, 66 days; cumulative incidence 0.6%) vs. 84 unvaccinated HCWs (median follow-up 43 days; cumulative incidence, 5.1%); HR=0.11 (95% CI 0.07, 0.17), unadjusted VE=89% (95% CI 83%, 93%). Adjusted VE beyond seven days and >14 days post second dose were similar. The median PCR Cts targeting ORF1ab gene among 20 vaccinated and 40 unvaccinated HCWs was 32.0 vs. 26.7, respectively, p=0.008.
>
> Conclusions: VE following two doses of BNT162b2 against SARS-CoV-2 acquisition in LTCF HCWs was high. The lower viral loads among SARS-CoV-2 positive HCWs suggests further reduction in transmission."

Mental Health, Psychosocial Issues, and Wellness

News in Brief

"Suicide rates fall again — but not for young adults and some people of color" (NPR; see also: CDC NVSS Vital Statistics report [pdf]).

"The pandemic is still making us feel terrible — Turns out, it's hard to adjust to a new normal when that new normal keeps changing" (Atlantic).

Journal Articles

JAMA Netw Open: Trends in the Use of Benzodiazepines, Z-Hypnotics, and Serotonergic Drugs Among US Women and Men Before and During the COVID-19 Pandemic (25 October 2021)

> "Question: What are the changes in prescribing rates in men and women of benzodiazepines, Z-hypnotics, and serotonergic drugs during the COVID-19 pandemic (2020 and 2021) compared with prior years (2018 and 2019)?
>
> Findings: This cohort study of US adults (15.1 million to 17.3 million depending on the year studied) found an increase in Z-hypnotic and serotonergic drug prescriptions in both men and women along with an increase in benzodiazepine prescriptions in women at the start of the COVID-19 pandemic.

> Meaning: These findings suggest a substantial association of COVID-19–associated social isolation, stay-at-home orders, and other COVID-related mitigation measures with mental health issues, especially among women."

Risk, Transmission, and Exposure

News in Brief

"When are masks most useful? COVID cases offer hints. Masks offer the greatest protection indoors and during long exposures to people infected with the coronavirus — but other public-health measures matter, too" (Nature; see also: medRxiv preprint).

"Coronavirus scare at Shanghai Disneyland left thousands trapped" (WP).

Journal Articles

Clin Infect Dis: The removal of airborne SARS-CoV-2 and other microbial bioaerosols by air filtration on COVID-19 surge units (30 October 2021)

> "Airborne SARS-CoV-2 was detected in a COVID-19 ward before activation of portable HEPA-air filtration, but not during the week of filter operation; SARS-CoV-2 was again detected when the filter was off. Airborne SARS-CoV-2 was infrequently detected in a COVID-19 ICU. Filtration significantly reduced other microbial bioaerosols in both settings."

JAMA Netw Open: Contact and SARS-CoV-2 Infections Among College Football Athletes in the Southeastern Conference During the COVID-19 Pandemic (29 October 2021)

> "This cohort study of college football players in a single athletic conference examines the association of close contact events among players on opposing teams and subsequent positive SARS-CoV-2 tests....
>
> In this analysis of US college athletes playing regular season SEC football games during the COVID-19 pandemic, no instances of in-game SARS-CoV-2 transmission was found....
>
> We report low SARS-CoV-2 interteam transmission risk in college football when rigorous and multipronged protection strategies were implemented, suggesting game play during a pandemic did not seed outbreaks across jurisdictions. Despite 12% of athletes testing positive for SARS-CoV-2, only 18 had competed during the preceding 48 hours, and no downstream infections to members of the opposing team were apparent. Actual contacts were exceedingly brief, even when accumulated over an entire game. In-game close contact

> was rare, not associated with SARS-CoV-2 transmission, and no CDC defined close contact exposures were observed."

Clin Infect Dis: Universal community nucleic acid testing for COVID-19 in Hong Kong reveals insights into transmission dynamics: a cross-sectional and modelling study (28 October 2021)

> "Background: Testing of an entire community has been used as an approach to control COVID-19. In Hong Kong, a universal community testing programme (UCTP) was implemented at the fadeout phase of a community epidemic in July to September 2020. We described the utility of the UCTP in finding unrecognised infections, and analysed data from the UCTP and other sources to characterise transmission dynamics.
>
> Methods: We described the characteristics of people participating in the UCTP and compared the clinical and epidemiological characteristics of COVID-19 cases detected by the UCTP versus those detected by clinical diagnosis and public health surveillance (CDPHS). We developed a Bayesian model to estimate the age-specific incidence of infection and the proportion of cases detected by CDPHS.
>
> Results: 1.77 million people, 24% of the Hong Kong population, participated in the UCTP from 1 to 14 September 2020. The UCTP identified 32 new infections (1.8 per 100,000 samples tested), consisting of 29% of all local cases reported during the two-week UCTP period. Compared with the CDPHS, the UCTP detected a higher proportion of sporadic cases (62% versus 27%, $p < 0.01$) and identified 6 (out of 18) additional clusters during that period. We estimated that 27% (95% credible interval: 22%, 34%) of all infections were detected by the CDPHS in the third wave.
>
> Conclusions: We reported empirical evidence of the utility of population-wide COVID-19 testing in detecting unrecognised infections and clusters. Around three quarters of infections have not been identified through existing surveillance approaches including contact tracing."

Anaesthesia: Quantitative evaluation of aerosol generation during manual facemask ventilation (26 October 2021)

> "Manual facemask ventilation, a core component of elective and emergency airway management, is classified as an aerosol-generating procedure. This designation is based on one epidemiological study suggesting an association between facemask ventilation and transmission during the SARS-CoV-1 outbreak in 2003. There is no direct evidence to indicate whether facemask ventilation is a high-risk procedure for aerosol generation. We conducted aerosol monitoring during routine facemask ventilation and facemask ventilation with an intentionally generated leak in anaesthetised patients. Recordings were made in ultraclean operating theatres and compared against the aerosol generated by tidal breathing and cough manoeuvres. Respiratory aerosol from tidal breathing in 11 patients

> was reliably detected above the very low background particle concentrations with median [IQR (range)] particle counts of 191 (77-486 [4-1313]) and 2 (1-5 [0-13]) particles.l-1 , respectively, p = 0.002. The median (IQR [range]) aerosol concentration detected during facemask ventilation without a leak⎵(3 (0-9 [0-43]) particles.l-1) and with an intentional leak (11 (7-26 [1-62]) particles.l-1) was 64-fold (p = 0.001) and 17-fold (p = 0.002) lower than that of tidal breathing, respectively. Median (IQR [range]) peak particle concentration during facemask ventilation both without a leak (60 (0-60 [0-120]) particles.l-1) and with a leak (120 (60-180 [60-480]) particles.l-1) were 20-fold (p = 0.002) and 10-fold (0.001) lower than a cough (1260 (800-3242 [100-3682]) particles.l-1), respectively. This study demonstrates that facemask ventilation, even when performed with an intentional leak, does not generate high levels of bioaerosol. On the basis of this evidence, we argue facemask ventilation should not be considered an aerosol-generating procedure."

Influenza Other Respir Viruses: Transmission of SARS-CoV-2 during a 2-h domestic flight to Okinawa, Japan, March 2020 (03 October 2021)

> "Background: Coronavirus disease (COVID-19), caused by severe acute respiratory syndrome coronavirus (SARS-CoV-2), has rapidly spread globally. Potentially infected individuals travel on commercial aircraft. Thus, this study aimed to investigate and test the association between the use of face masks, physical distance, and COVID-19 among passengers and flight attendants exposed to a COVID-19 passenger in a domestic flight.
>
> Methods: This observational study investigated passengers and flight attendants exposed to COVID-19 on March 23, 2020, on board a flight to Naha City, Japan. Secondary attack rates were calculated. Whole-genome sequencing of SARS-CoV-2 was used to identify the infectious linkage between confirmed cases in this clustering. The association between confirmed COVID-19 and proximity of passengers' seats to the index case and/or the use of face masks was estimated using logistic regression.
>
> Results: Fourteen confirmed and six probable cases were identified among passengers and flight attendants. The secondary attack rate was 9.7%. Twelve of 14 SARS-CoV-2 genome sequences in confirmed cases were identical to that of the index case or showed only one nucleotide mutation. Risk factors for infection included not using a face mask (adjusted odds ratio [aOR]: 7.29, 95% confidence interval [95% CI]: 1.86-28.6), partial face mask use (aOR: 3.0, 95% CI: 0.83-10.8), and being seated within two rows from the index patient (aOR: 7.47, 95% CI: 2.06-27.2).
>
> Conclusion: SARS-CoV-2 was transmitted on the airplane. Nonuse of face masks was identified as an independent risk factor for contracting COVID-19 on the airplane."

Health Messaging and Misinformation

News in Brief

"How conspiracists exploited COVID-19 science" (Nat Hum Behav).

"China-linked disinformation campaign blames Covid on Maine lobsters — The University of Oxford found evidence that pro-China social media accounts are pushing a new thread of propaganda related to the origins of the pandemic" (NBC).

I AM THE CORONA VIRUS -
TINY BUT MIGHTY
THE SECRET OF MY POWER IS MY EXPONENTIAL GROWTH.
WHO'RE YOU?
MISINFORMATION
WHOA! IMPRESSIVE

Image taken from: WHO's Infodemic Management News Flash Issue #25

Journal Articles

Vaccine: Determinants of information diffusion in online communication on vaccination: The benefits of visual displays (15 October 2021)

> "Objective: Social media are an increasingly important source of information on the benefits and risks of vaccinations, but the high prevalence of misinformation provides challenges for informed vaccination decisions. It is therefore important to understand which messages are likely to diffuse online and why, and how relevant aspects-such as scientific facts on vaccination effectiveness-can be made more comprehensible and more likely to be shared. In two studies, we (i) explore which characteristics of messages on flu vaccination facilitate

their diffusion in online communication, and (ii) whether visual displays (i.e., icon arrays) facilitate the comprehension and diffusion of scientific effectiveness information.

Methods: In Study 1, 208 participants each rated a random sample of 15 out of 63 messages on comprehensibility, trustworthiness, persuasiveness, familiarity, informativeness, valence, and arousal, and then reported which information they would share with subsequent study participants. In Study 2 (N = 758), we employed the same rating procedure for a selected set of 9 messages and experimentally manipulated how scientific effectiveness information was displayed.

Results: Study 1 illustrated that scientific effectiveness information was difficult to understand and thus did not diffuse well. Study 2 demonstrated that visual displays improved the understanding of this information, which could, in turn, increase its social impact.

Conclusions: The comprehensibility of scientific information is an important prerequisite for its diffusion. Visual displays can facilitate informed vaccination decisions by rendering important information on vaccination effectiveness more transparent and increasing the willingness to share this information."

Other Infectious Diseases and Public Health Issues

News in Brief

Don't get hand sanitizer in your eye, okay? (FDA)

"How biological detective work can reveal who engineered a virus — Exciting new research should make it easier to hold rogue bioengineers accountable" (Vox).

The source of a multistate outbreak of melioidosis has been traced back to an aromatherapy room spray (CDC HAN).

Opinion: "The COVID pandemic must lead to tuberculosis vaccines. The coronavirus crisis has halted decades of progress on TB. But the speed of COVID vaccines shows there can still be hope for advances against neglected diseases" (Nature).

Food Safety

From salami sticks to onions to backyard poultry, there's numerous multistate *Salmonella* outbreaks (CDC).

Watch out for sweet things, too: metal shavings have been found in Tastycakes, prompting a recall (NPR), and luster dust used in cake decorating has been reported causing toxic metal poisonings (MMWR).

The FDA has issued advice about eating fish for those who might become or are pregnant or breastfeeding (FDA).

Long Reads

"Babies are dying of syphilis. It's 100% preventable — The United States' inability to curb a treatable sexually transmitted disease shows the failures of a cash-strapped public health system. Increasingly, newborns are paying the price" (ProPublica).

How public health took part in its own downfall — The field's future lies in reclaiming parts of its past that it willingly abandoned" (Atlantic).

Journal Articles

MMWR: Progress Toward Global Eradication of Dracunculiasis, January 2020–June 2021 (05 November 2021)

> "What is already known about this topic? Cases of dracunculiasis (Guinea worm disease) have decreased from an estimated 3.5 million in 1986 to 27 in 2020. Emergence of Guinea worm infections in dogs in 2012 has complicated eradication efforts.
>
> What is added by this report? With 27 cases in humans reported in 2020, five during January–June 2021, and only six countries currently affected by dracunculiasis (Angola, Chad, Ethiopia, Mali, South Sudan, and importations into Cameroon), achievement of eradication appears to be close.
>
> What are the implications for public health practice? Existence of infected dogs, especially in Chad, and impeded access because of civil unrest and insecurity in Mali and South Sudan are now the greatest challenges to interrupting transmission."

Travel Med Infect Dis: No time to die: An in-depth analysis of James Bond's exposure to infectious agents (16 October 2021)

> "Global travelers, whether tourists or secret agents, are exposed to a smörgåsbord of infectious agents. We hypothesized that agents pre-occupied with espionage and counterterrorism may, at their peril, fail to correctly prioritize travel medicine. To examine our hypothesis, we examined adherence to international travel advice during the 86 international journeys that James Bond was observed to undertake in feature films spanning 1962–2021. Scrutinizing these missions involved ~3113 min of evening hours per author that could easily have been spent on more pressing societal issues. We uncovered

above-average sexual activity, often without sufficient time for an exchange of sexual history, with a remarkably high mortality among Bond's sexual partners (27.1; 95% confidence interval 16.4–40.3). Given how inopportune a bout of diarrhea would be in the midst of world-saving action, it is striking that Bond is seen washing his hands on only two occasions, despite numerous exposures to foodborne pathogens. We hypothesize that his foolhardy courage, sometimes purposefully eliciting life-threatening situations, might even be a consequence of Toxoplasmosis. Bond's approach to vector-borne diseases and neglected tropical diseases is erratic, sometimes following travel advice to the letter, but more often dwelling on the side of complete ignorance. Given the limited time Bond receives to prepare for missions, we urgently ask his employer MI6 to take its responsibility seriously. We only live once."

Statistics

	Total Cases	*Total Deaths*	*Total Vaccine Doses Administered*
Global	248,787,600	5,033,049	7,184,402,504
United States	46,335,944	751,559	425,054,845

JHU CSSE as of 1000 EDT 05 November 2021

Virginia	Total cases (state)	Chesapeake	Hampton	Newport News	Norfolk	Portsmouth	Suffolk	Virginia Beach
Cases	933,542	28,966	15,128	20,732	24,579	12,734	10,996	50,017
Hospitalizations	39,097	1,305	687	784	1,517	897	702	2,619
Deaths	14,125	361	238	301	342	243	236	556

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